

## SECTION 02538

### SANITARY SEWER SYSTEMS

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#### **LANL MASTER CONSTRUCTION SPECIFICATION**

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the Engineering Standards Manual (ESM) Civil POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 / ML- 4 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Site piping, fittings, manholes, and accessories beyond 5 feet of building wall.

##### 1.2 LANL PERFORMED WORK

- A. LANL's Support Services Subcontractor (SSS) will tie into existing systems which include sanitary sewer lines, septic tanks, treatment plants, lift stations, and manholes.
- B. SSS will inspect interior of new and existing sanitary sewer lines (accessible by camera) with video camera for piping integrity and proper installation both before tie-in and at turnover.

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AE shall coordinate with LANL Projects Manager to ensure an approved WPF (Waste Profile Form) for all anticipated wastewater has been submitted to the LANL Utility Water Wastewater representative prior to completion of design.

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- C. LANL Construction Inspector will ensure all drains or buildings connected to the sanitary wastewater system have an approved WPF (Waste Profile Form) for all anticipated wastewater. Documentation shall be submitted to the LANL Utility Group wastewater representative prior to utility tie-in.  
<http://enterprise.lanl.gov/forms/1346.pdf>
- D. LANL Construction Inspector will coordinate all required inspections and tie-ins.

### 1.3 SUBMITTALS

A. Submit the following in accordance with Section 01330, Submittal Procedures:

1. Catalog data on pipe materials, fittings and accessories.
2. Certifications of welders qualified for heat fusion polyethylene joints.

### 1.4 QUALITY ASSURANCE

A. Welders Certifications and Qualified Procedure Standards

1. Plastic Pipe: 49CFR192.283 and 192.285, and Driscopipe heat fusion qualification guide.

## PART 2 PRODUCTS

### 2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Comply with Section 01630, Product Options and Substitutions.

### 2.2 SANITARY SEWER PIPING, BURIED BEYOND 5 FEET OF BUILDING

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NOTE: Consult with a LANL Utilities Group wastewater representative for approval when selecting piping material beyond 5 feet of the building and under roads. Under roadways will require ductile iron or metallic pipe sleeve with spacers.

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A. Ductile Iron Pipe: AWWA C151, Class 150.

1. Joints: Bell and spigot, AWWA C111 rubber gaskets.
2. Fittings: AWWA C110, Ductile-Iron or Gray-Iron, Class 350 or AWWA C153, Ductile-Iron Compact Fittings, Class 350.

B. PVC Pipe and Fittings: ASTM D3034, SDR 35.

1. Joints: Bell and spigot, ASTM D3212 rubber gaskets.

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Specify the following (2.2 C and D) for pressure systems (non-gravity)

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C. PVC Pipe: AWWA C900, Class 150 (DR 18).

1. Joints: Bell and spigot, ASTM D3212 rubber gaskets.
2. Fittings: AWWA C110, Ductile-Iron or Gray-Iron, Class 350 or AWWA C153, Ductile-Iron Compact Fittings, Class 350.

D. Ductile Iron Pipe: AWWA C151, Class 150.

1. Joints: Bell and spigot, AWWA C111 rubber gaskets.

2. Fittings: AWWA C110, Ductile-Iron or Gray-Iron, Class 350 or AWWA C153, Ductile-Iron Compact Fittings, Class 350.

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PE Pipe may be used for gravity and pressure systems.

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E. Polyethylene Pipe and Fittings.

1. Manufacturer: CP Chem Performance Pipe, [Driscoplex 4200, Iron Pipe Size] or [Driscoplex 4300, Ductile Iron Pipe Size].
2. Material: High density polyethylene, ASTM D3350, PE3408, SDR 15.5 (working pressure rating of 110 psi at 73 degrees F), cell classification number PE 345464C.
3. Joints: Heat fusion per manufacturer's instruction.

## 2.3 CLEANOUTS

- A. Manufacturer: Pasco Specialties and Mfg.
- B. [Select cleanouts to suit project. Refer to manufacturer's catalog data for selection criteria. Provide ferrous metal cleanout top with brass countersunk screw plug.]

## 2.4 MANHOLE

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Refer to Civil Drawing [ST-G3020-1](#) for manhole detail.

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- A. Provide precast concrete manhole, concrete grade rings, and ductile iron cover per Drawings and Section 02535, Manholes.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify excavations are to required grade. Do not over excavate.

### 3.2 PREPARATION

- A. Ream pipe ends and remove burrs.
- B. Remove scale and dirt on inside and outside of piping before assembly.
- C. Keep open ends of pipe free from scale and dirt. Whenever work is suspended during construction, or at the end of each workday, protect open ends with temporary plugs or caps.

### 3.3 TIE-INS

- A. Notify LANL Construction Inspector at least 10 working days in advance to schedule tie-in of piping system and pre-tie-in video inspection described in Section 3.6.
- B. Tie-ins to existing piping, lift stations, manholes, and equipment shall be coordinated with and performed by LANL's Support Services Subcontractor. Excavation, backfill, and materials required for tie-in shall be provided by Contractor.

### 3.4 BURIED PIPING

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Tracer wire and test stations are required when specifying cast iron, ductile iron, and non-metallic piping. Comply with Civil Standard Drawing [ST-G30GEN-3](#) for tracer wire/test station details and Civil Standard Drawing [ST-G30GEN-4](#) for trenching detail.

Refer to the LANL Engineering Standards Manual Civil Chapter, Section G30 (future), for required minimum utility line clearances.

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- A. Refer to Drawings and Section 02310, Grading, Excavating, and Trenching, for earth cover, bedding, tracer wire, wire continuity test, warning tape, documenting new or exposed existing utility location, etc requirements.

### 3.5 INSTALLATION

- A. Comply with Uniform Plumbing Code (IAPMO).
- B. Encase exterior cleanouts in concrete, flush with grade.
- C. Route piping in orderly manner and maintain gradient.
- D. Install bell and spigot pipe with bell end upstream.
- E. Sleeve and caulk pipes penetrating exterior walls below grade to provide a waterproof installation.
- F. Pressure test piping system with water or air in accordance with Section 15992.
- G. Set concrete manholes level and plumb and test manholes for leakage per Section 02535.
- H. Sewer Pipe Bursting
  - 1. Install pipe at manhole tie-ins at the same invert elevation without sags or low points.
  - 2. Chip manhole wall only to allow for insertion of new pipe. Caulk/seal around new pipe to provide watertight installation.

### 3.6 LANL ACCEPTANCE INSPECTION AND TESTING

- A. Notify LANL Construction Inspector at least 10 working days before tie-in to schedule video inspection of piping system. Inspection will verify that new and existing lines are clean and acceptable for tie-in to commence.
- B. Notify LANL Construction Inspector at least 7 working days before system turnover to schedule second and final video inspection of piping system. The re-inspection is to assure no debris from construction activity has entered the new or existing system.
- C. LANL Construction Inspector will contact LANL Utilities Group wastewater representative to obtain permit and arrange for LANL's Support Services Subcontractor video inspection of new piping (as much as is accessible) and existing system from tie-in downstream 200 feet.

END OF SECTION

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Do not delete the following reference information:

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FOR LANL USE ONLY

This project specification is based on LANL Master Construction Specification Rev. 3, dated July 9, 2003.